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(54) Title: GENETICALLY ENCODED BIOINDICATORS OF CALCIUM-IONS

(57) Abstract: The present invention relates to novel types of cellular calcium probes that are based on Troponin C and two chromophores suitable for FRET (fluorescence resonance energy transfer). The Troponin C-based calcium sensors of the invention function in diverse subcellular environments, for example even when tethered to a cellular membrane. The invention further provides nucleic acid constructs encoding the calcium probes of the invention, expression constructs, host cells and transgenic animals. Furthermore, methods for the detection of changes of local calcium concentrations and for detecting the binding of a small molecule to fragments of Troponin C are provided.